

CLAIMS

1. Transportation apparatus for transportation of an inspection device within a body cavity, the apparatus comprising:

5 a carrier for insertion into an opening of the body cavity, the carrier moveable between a collapsed position and an extended position where the carrier extends along a length of the cavity; and

10 a guide member coupled to the carrier, the guide member adapted to be carried into the cavity by the carrier when the carrier is moved to the extended position, such that the guide member acts as a guide for transportation of the inspection device within the cavity.

15 2. Apparatus as claimed in claim 1, wherein the guide member is moveable between a relaxed state and a rigid state, the guide member acting as a guide when in the rigid state.

20 3. Apparatus as claimed in claim 2, wherein the guide member is adapted to be carried into the cavity in the relaxed state and adapted to be moved to the rigid state following movement of the carrier to the extended position.

25 4. Apparatus as claimed in either of claims 2 or 3, wherein the guide member is reversibly moveable between the rigid state and the relaxed state.

30 5. Apparatus as claimed in any one of claims 2 to 4, wherein the guide member is lockable in the rigid state.

6. Apparatus as claimed in claim 1, wherein the guide member is at least partly rigid.

7. Apparatus as claimed in claim 6, wherein the guide member comprise an endoscope.

8. Apparatus as claimed in any preceding claim, wherein  
5 the guide member is releaseably coupled to the carrier.

9. Apparatus as claimed in claim 8, further comprising a  
releaseable coupling for releaseably coupling the guide  
member to the carrier.

10 10. Apparatus as claimed in claim 9, wherein the coupling  
comprises a shape memory alloy (SMA) coupling.

11. Apparatus as claimed in any preceding claim, wherein  
15 the guide member defines a plurality of engagement portions  
adapted to be engaged by an inspection device for  
transportation of the device within the cavity.

12. Apparatus as claimed in claim 10, wherein the guide  
20 member comprises an elongate support with a plurality of  
engagement portions mounted on the support.

13. Apparatus as claimed in claim 12 when dependent on  
claim 2, wherein the engagement portions are moveably  
25 mounted on the elongate support and wherein the elongate  
support is tensionable to move the guide member to the  
rigid state.

14. Apparatus as claimed in any one of claims 11 to 13,  
30 wherein the engagement portions comprise bodies defining an  
engagement surface.

15. Apparatus as claimed in claim any one of claims 1 to  
10, wherein the guide member includes a plurality of  
35 locking elements for locking the guide member in a rigid

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state.

16. Apparatus as claimed in claim 15, wherein the locking elements comprise shape memory alloy (SMA) locks.

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17. Apparatus as claimed in either of claims 15 or 16, wherein the locking elements comprise a first set of locking elements adapted to be actuated to rigidise the guide member and a second set of locking elements adapted to be actuated to relax the guide member.

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18. Apparatus as claimed in claim 17, wherein the first and second sets of locking elements are adapted to be actuated at different temperatures.

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19. Apparatus as claimed in any one of claims 15 to 18, wherein the guide member is electrically conductive to allow an electric current to be passed along the guide member, for actuation of the locking elements.

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20. Apparatus as claimed in any preceding claim, wherein the carrier is flexible when in the collapsed position and adapted to be constrained by a wall of the body cavity when in the extended position.

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21. Apparatus as claimed in any preceding claim, wherein the carrier is inflatable.

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22. Apparatus as claimed in claim 21, wherein the carrier comprises an inflatable elongate balloon.

23. Apparatus as claimed in claim 22, wherein the carrier is adapted to be inserted into the opening of the body cavity in an everted position.

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24. A carrier for facilitating transport of a member into a body cavity, the carrier being adapted for insertion into an opening of the body cavity, the carrier moveable between a collapsed position and an extended position where the 5 carrier extends along a length of the body cavity.

25. Inspection apparatus for inspecting a body cavity, the apparatus comprising:

10 a carrier for insertion into an opening of the body cavity, the carrier moveable between a collapsed position and an extended position where the carrier extends along a length of the cavity;

15 a guide member coupled to the carrier, the guide member adapted to be carried into the cavity by the carrier when the carrier is moved to the extended position; and

an inspection device adapted to co-operate with the guide member for transportation within the cavity.

26. Apparatus as claimed in claim 25, wherein the 20 inspection device is adapted to be transported within the cavity along the guide member.

27. Apparatus as claimed in either of claims 25 or 26, wherein the guide member comprises a data coupling 25 connected to the inspection device, to facilitate transmission of data from the inspection device.

28. Apparatus as claimed in any one of claims 25 to 27, wherein the inspection device is coupled to the guide 30 member such that in the carrier extended position, the inspection device is located within the carrier.

29. Apparatus as claimed in any one of claims 25 to 27, wherein the inspection device is coupled to the guide 35 member such that in the carrier extended position, the

inspection device is located externally of the carrier.

30. Apparatus as claimed in any one of claims 25 to 29,  
wherein the inspection device is adapted to engage the  
5 guide member for transportation within the cavity.

31. Apparatus as claimed in any one of claims 25 to 30,  
wherein the inspection device is self-driven and includes  
a drive mechanism for engaging the guide member.

10 32. Apparatus as claimed in claim 31, wherein the drive  
mechanism comprises teeth for engaging engagement portions  
of the guide member.

15 33. Apparatus as claimed in any one of claims 25 to 32,  
wherein the inspection device is adapted to be externally  
driven.

20 34. Apparatus as claimed in claim 25, wherein the  
inspection device is coupled to the guide member and is  
adapted to be transported within the cavity by the guide  
member.

25 35. Apparatus as claimed in any one of claims 25 to 34,  
further comprising transportation apparatus as defined in  
any one of claims 2 to 24.

30 36. A carrier for facilitating transport of an endoscope  
into a body cavity, the carrier being adapted for insertion  
into an opening of the body cavity, the carrier moveable  
between a collapsed position and an extended position where  
the carrier extends along a length of the body cavity.

35 37. Inspection apparatus for inspecting a body cavity, the  
apparatus comprising:

a carrier for insertion into an opening of the body cavity, the carrier moveable between a collapsed position and an extended position where the carrier extends along a length of the cavity; and

5 an inspection device coupled to the carrier.

38. A method of transporting an inspection device within a body cavity, the method comprising the steps of:

10 coupling a guide member for the inspection device to a flexible carrier;

15 inserting the flexible carrier into an opening of the cavity in a collapsed position and moving the carrier to an extended position where the carrier extends along a length of the cavity, the carrier carrying the guide member into the cavity during movement to the extended position; and

transporting the inspection device within the cavity using the guide member.

20 39. A method as claimed in claim 38, further comprising carrying the guide member into the cavity in a relaxed state and subsequently moving the guide member to a rigid state.

25 40. A method as claimed in either of claims 38 or 39, further comprising releaseably coupling the guide member to the carrier and, following movement of the carrier to the extended position, releasing the carrier from the guide member and recovering the carrier from the cavity.

30 41. A method as claimed in either of claims 38 or 39, wherein the carrier remains coupled to the guide member during transportation of the inspection device within the cavity.

35 42. A method as claimed in any one of claims 38 to 41,

further comprising inflating the carrier to move the carrier to the extended position.

43. A method as claimed in any one of claims 38 to 42,  
5 further comprising transporting the inspection device within the cavity along the guide member.

44. A method as claimed in claim 43, further comprising self-driving the inspection device along the guide member  
10 and remotely controlling the inspection device.

45. A method as claimed in claim 43, comprising externally driving the inspection device.

15 46. A method as claimed in any one of claims 38 to 42, further comprising coupling the inspection device to the guide member and drawing the inspection device through the cavity using the guide member.

20 47. A method as claimed in claim 46, further comprising transporting the inspection device to an end of the guide member located within the cavity and then retracting the guide member from the body cavity.

25 48. A method as claimed in claim 47, further comprising moving the guide member to the relaxed state prior to retraction from the body cavity.